

that there is no support in the specification for defining "2b" or for defining "b" as an integer of 0-1 in formula (16).

Applicants submit that original formula (16) contained an error, which was corrected by the amended formula (16) in the Amendment under 37 C.F.R. § 1.111 filed on April 26, 2005. The original formula (16) included a subscript "l" (lower case "L") and "2-l," wherein "l" (lower case "L") is an integer of 0-3. In formula (16), M" is a tin atom, a silicon atom or a germanium atom, each of which have valence of four (M" requiring four bonds). M" can have four bonds in each of two configurations: (1) when the subscript of R<sup>21</sup> is 2 and the expression 2-l (lower case "L") is 1, and (2) when the subscript of R<sup>21</sup> is 1 and the expression 2-l (lower case "L") is 2. The original formula (16) only achieved (2) above. Applicants recognized this error and therefore amended "b" (formerly "l") in formula (16) to be "2b" and amended the definition of "b" to be an integer of 0-1. "An amendment to correct an obvious error does not constitute new matter where one skilled in the art would not only recognize the existence of error in the specification, but also the appropriate correction." *In re Oda*, 443 F.2d 1200, 170 USPQ 268 (CCPA 1971). Applicants submit that one skilled in the art would not only recognize the existence of the error in formula (16), but would also recognize the appropriate correction. Therefore, the amendment to formula (16) is not new matter.

In view of the foregoing, Applicants respectfully request that the Examiner reconsider and withdraw the rejection.

Claims 1-15 and 18-20 have been rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Ikematsu, JP 05059103 or JP 05051406 (“Ikematsu ‘103” or “Ikematsu ‘406”), in combination with Tsujimoto et al., JP 8073515 (“Tsujimoto”).

Tsujimoto does not disclose or suggest a method of producing a conjugated diene polymer in which a conjugated diene compound is polymerized with a catalyst consisting essentially of (a) to (d) in an organic solvent, and then reacting it with at least one compound selected from the group consisting of components (i) and (j).

Additionally, the catalyst system of the present invention is entirely different from the catalyst system of Ikematsu ‘103 and Ikematsu ‘406 in the presence of aluminoxane.

Applicants submit that Ikematsu ‘103, Ikematsu ‘406 and Tsujimoto do not disclose the claimed molecular weight, molecular weight distribution, and coupling reaction or the vulcanization properties, such as wear resistance, low heat buildup, etc., as an effect of the present invention.

The molecular weight and molecular weight distribution effect the vulcanization properties. In general, these properties are deteriorated as the molecular weight of the polymer becomes low. Since the polymer having a broad molecular weight distribution contains a number of low molecular weight components, it is unsuitable for improving the rebound resilience and wear resistance. Therefore, a polymer having a high molecular weight and a narrow molecular weight distribution is desirable for improving the rebound resilience and wear resistance.

Also, when a functional group interacting with a filler is introduced into a terminal of the polymer the above properties may be improved. However, as in Ikematsu '103 and Ikematsu '406, if an ester compound is introduced into the terminal of the polymer, it is difficult to predict that the properties of the resulting polymer are improved because the interaction with the filler, such as carbon black, or the like is weak. Further, in Ikematsu '103 or Ikematsu '406 the coupling reaction is used for the formation of branching so that the molecular weight distribution of the polymer becomes broad.

Additionally, Applicants submitted the § 132 Declaration on April 26, 2005 to show that the present invention would not be obvious over Ikematsu and Tsujimoto. Run-1 in the § 132 Declaration submitted on April 26, 2005 corresponds to Example 11 of the present invention in which the modified polymer is produced by synthesizing a polymer with the catalyst system described in Tsujimoto and subjecting to a coupling reaction with the ester compound described in Ikematsu in order to clearly show the effect of the present invention. This modified polymer has the following features: (1) the molecular weight distribution is broader than that of Tsujimoto by the coupling reaction; (2) the ester compound bonded to the terminal of the polymer is weak in the interaction with the filler.

In Run-1, the modified polymer is produced by synthesizing a polymer with the catalyst system described in Tsujimoto and then is subjected to a coupling reaction with the ester compound described in Ikematsu to show the effects of the present invention. In Run-1, the molecular weight is broader than that of Tsujimoto by the coupling reaction and the ester compound bonded to the terminal of the polymer is weak in its interaction with the filler.

Since the polymer of Run-1 does not have the functional group having an interaction with the filler in the terminal of the polymer, the broad molecular weight distribution would greatly effect the properties which are desirable in the present invention. It would be expected based on what is known in the art that the wear resistance and low heat buildup would be deteriorated in Run-1 as compared with Run-2 because the polymer obtained by the combination of Ikematsu '103 or Ikematsu '406 and Tsujimoto has a molecular weight distribution of 3.4, which is broader than the molecular weight distribution of 2.2 in the polymer of Run-2, which corresponds to the invention of Tsujimoto. However, the properties of Run-1 are unexpectedly superior as compared with those of Run-2, which is contrary to the knowledge in the art and it is impossible to predict this effect based the teachings of Ikematsu '103, Ikematsu '406, and Tsujimoto.

Based on extensive experimentation on the relationship between the catalyst system and the polymerization behavior, the inventors have accomplished the present invention. That is, it has been found that the catalyst system according to the present invention has a higher living property and is suitable for the coupling reaction and that the low molecular weight components can be further reduced by utilizing the characteristic of the catalyst system to conduct the coupling reaction. Even in the polymer having a broad molecular weight distribution of Run-1, the excellent vulcanization properties are developed and the cold flow is improved. Therefore, Applicants submit that the present invention would not be obvious over the combination of Ikematsu '103, Ikematsu '406 and Tsujimoto. Reconsideration and withdrawal of the rejection is respectfully requested.

Appln. No.: 10/759,299  
Response under 37 C.F.R. § 1.116

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,

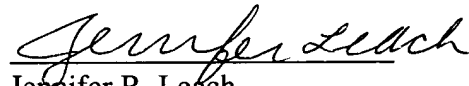
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Date: October 14, 2005

  
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